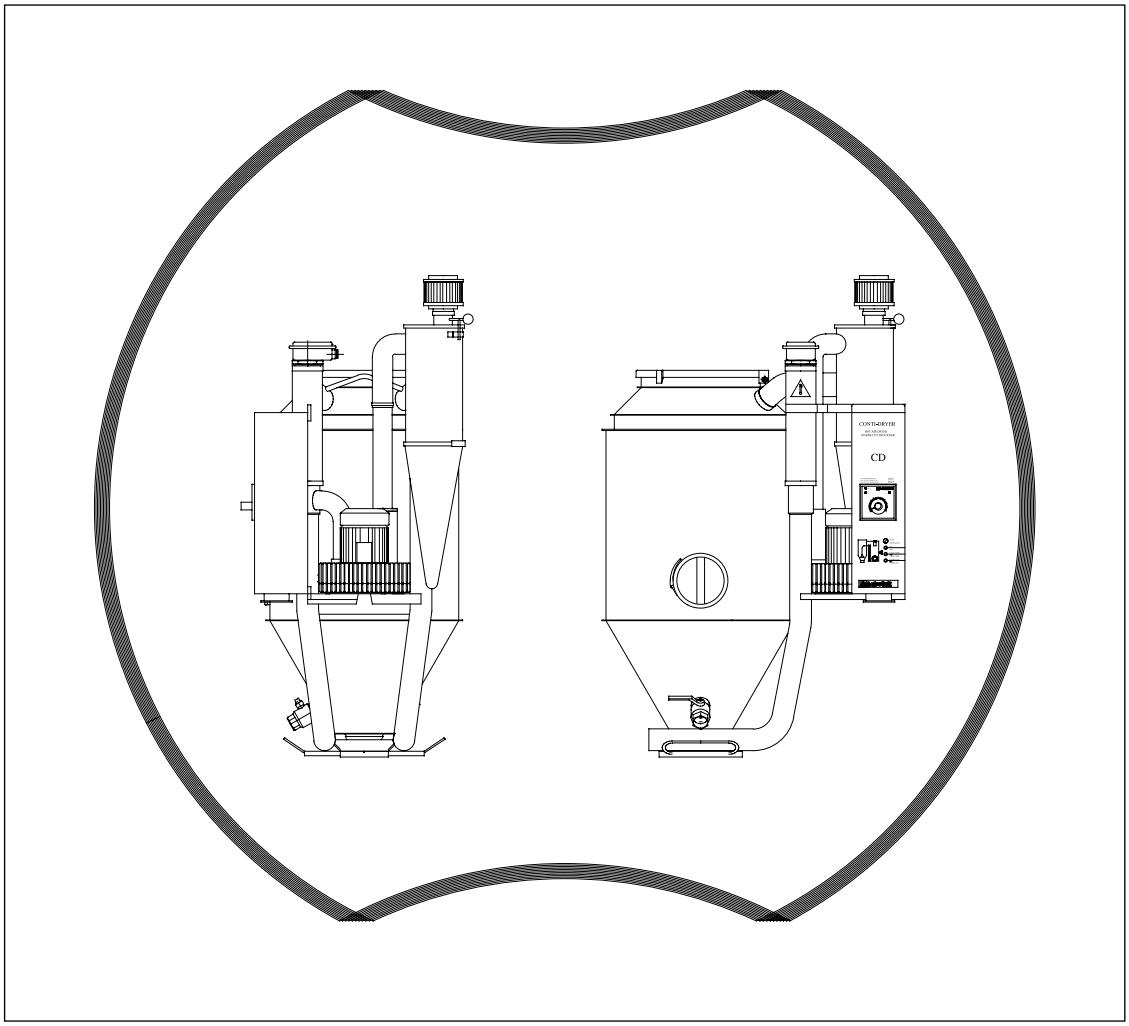
Labotek

Power in Plastics

MANUAL



Conti-Dryer
CD 25-600

Serial No. .....

ISO 08.01.02.12.GB

986041

Rev. February 1996

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NB!

All electrical diagrams can be found in the pocket in the back of the manual.

2.0 GENERAL INFORMATION

2.1 Use

The Conti-Dryer CD is a hot air dryer designed for drying of free-flowing plastics raw material in the form of granules. The Conti-Dryer is able to dry in batches or continuously.

2.2 Limitations

The Conti-Dryer CD operates on ambient air. The final residual humidity that is obtainable will therefore always depend on the ambient temperature and relative humidity.

To be able to operate continuously the Conti-Dryer CD must feature an automatic vacuum conveyor on the lid.

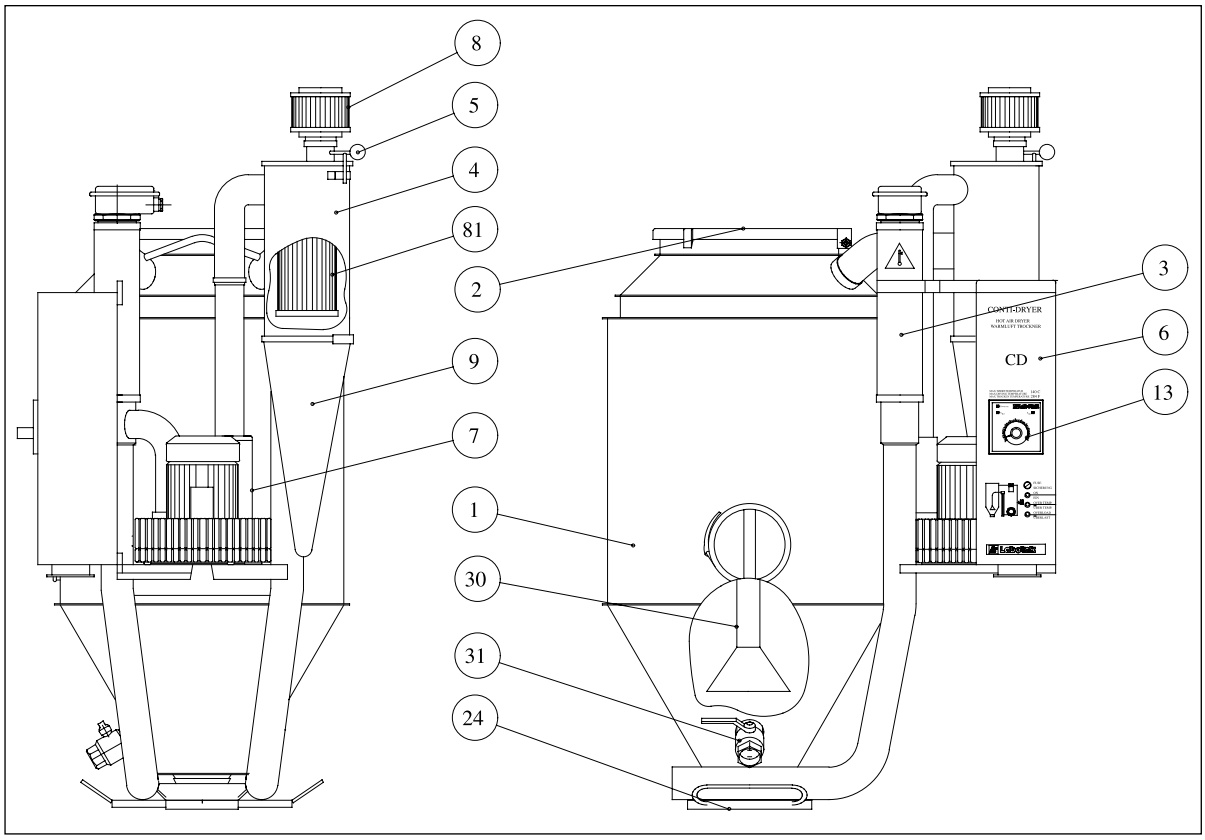
The Conti-Dryer CD cannot be used for materials in powder or liquid form or for living organisms. The CD must be operated by a qualified operator only and according to the correct procedures. The CD must be used only for the purposes described in this manual.

The machine must not be used in areas of explosive hazard.

2.3 Construction

The Conti-Dryer CD consists of the following main components:

(1) Insulated drying hopper with sight glass
(2) Lid with flange for Con-Evator vacuum conveyor
(3) Heater
(4) Filter housing
(5) Fresh air valve
(6) Control
(7) Blower
(8) Intake filter
(9) Filter bag
(13) Temperature controller
(24) Slide valve
(30) Air distributor
(31) Discharge valve
(81) Recycling filter



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2.4 Standards, directives, instructions etc. used

EN - 60204 - 1 / IEC - 204 – 1

IEC – 529

AT - instruction no. 2.2.0.1 of October 1990

Directive no. 73/23/EEC (low tension directive)

Directive no. 89/336/EEC changed by directive no. 92/31/EEC (EMC-directive).

Directive no. 89/392/EEC changed by directive no. 91/368/EEC (machine directive).

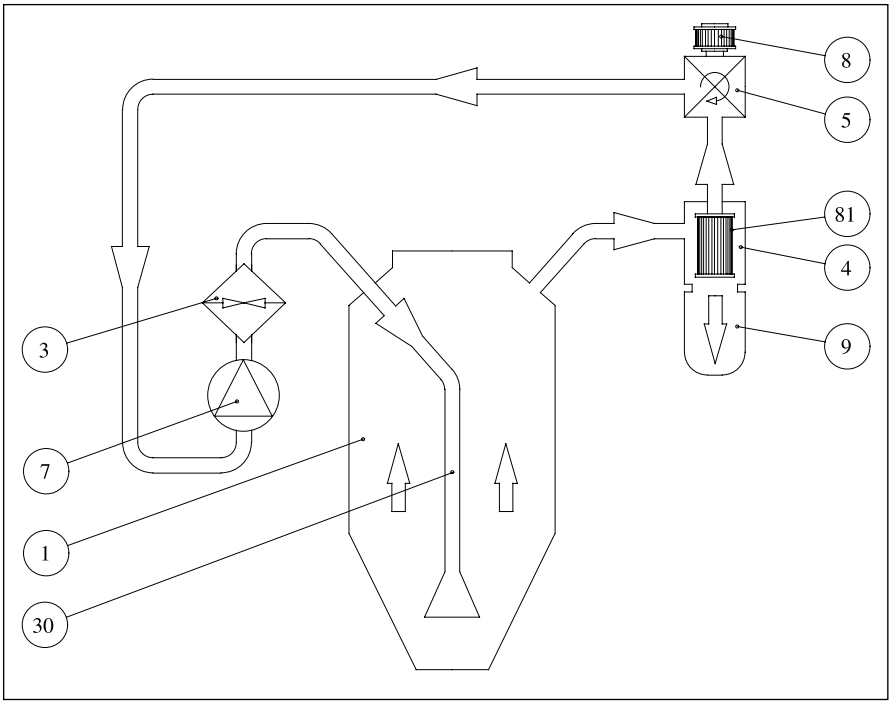
2.5 Operation principles

When the machine is turned on the blower (7) starts. The air goes pass the heater (3), via the drying hopper (1) and the filter housing (4) in a partly closed circuit.

When the air in the sytem has reached the temperature preset on the temperature controller (13), the heater (3) turns off.

To aid to evaporation of water vapour being released from the plastic granules, the air is exchanged by means of a fresh air valve (5). Fresh air is taken in through the intake filter (8), and the varm, moisty air leaves the system through the filter bag (9).

The fresh air valve (5) is continuously adjustable to ensure an optimum ratio between recycled and fresh air.



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2.6. Certificates

2.6.1 EQ-Net Certificate

EQNet

THE EUROPEAN NETWORK FOR QUALITY SYSTEM ASSESSMENT AND CERTIFICATION

This is to state that

Labotek A/S
Strøbjergvej 29, P.O.Box 100
DK-3600 Frederikssund

Labotek A/S
Dageløkkevej 4, DK-5953 Tranekær

holds the Quality System Certificate

DS-CERTIFICATE NO. 162

Issued 1993-02-16

for the standard from the
ISO 9000 / EN 29000
series, and the scope as specified therein

Signed for and on behalf of EQNet member

DATE April 1993

B. Axelsen

Bjarne Axelsen
Certification Manager

EQNet members are:

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The issuing member holds all other EQNet members harmless for any claims arising from the existence of this document

2.6.2 ISO Certificate

DANSK STANDARD

Kvalitetsstyringssystem Certifikat
Quality System Certificate

Certifikat nr. 162.1
Certificate No. 162.1

Det attesteres hermed, at kvalitetsstyringssystemet hos
This is to certify that the Quality System of

Labotek A/S
Strøbjergvej 29, P.O.Box 100
DK-3600 Frederikssund

Labotek A/S
Dageløkkevej 4, DK-5953 Tranekær

er i overensstemmelse med kravene i
fulfils the requirements in

DS/EN ISO 9001:1994

Certifikatets gyldighedsområde er:
The scope of this certificate is:

Periferiudstyr til plastindustrien.
Ancillary Equipment for The Plastics Industry.

Dette certifikat er udstedt i overensstemmelse med DS' bestemmelser vedrørende certificering af kvalitetsstyringssystemer. Certifikatets danske tekst betragtes som den juridisk gældende i tilfælde af tvivl om oversættelsens korrekthed. Certifikatet er gyldigt 1 år efter udstedelse eller 1 år efter sidste opfølgningsaudit gennemført med tilfredsstillende resultat, og såfremt dokumentation herfor fremgår af bilag A til dette certifikat.
This certificate is granted in conformity with the DS rules for the Certification of Quality Systems. The Danish certificate text of the certificate is considered legally binding in case of doubt with regard to the correctness of the translation. The certificate is valid for one year from the date of issue, or for one year from the latest surveillance audit carried out with a satisfactory result and only if attestation to this effect appears from Annex A of this certificate.

1996-01-19
Revisionsdato
Date of revision

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Udstedelsesdato
Date of issue

Mark Krølner
Ledende auditor, sagsverifikator
Lead auditor, Verifier

Steen Djursgård
Ledende auditor
Lead auditor

DANAK
Reg. nr. 5002

DS
DANSK STANDARD
DANISH STANDARDS ASSOCIATION
Baunegårdsvej 73, DK-2900 Hellerup

Accredited by RvA
Reg.No. 41

The Danish Standards Association is a member of EQNet, The International Certification Network

3.0 TECHNICAL DATA

3.1 Technical specifications

Conti-Dryer	**CD 25**	**CD 50**	**CD 90**	**CD 180**	**CD 350**	**CD 500**	**CD 600**
Supply voltage	3 x 220/380/415/440 V 50-60 Hz				3 x 380/415/440 V 50-60 Hz		
Control voltage 24 V via transformator	24 Volt AC via transformer						
Total load, kW	1.87/ 1.95	2.87/ 2.93	6.1/ 6.3	7.5/ 7.8	12.2/ 12.5	18.0/ 18.6	19.0/ 19.6
Blower motor 50/60 Hz	0.37/ 0.43	0.37/ 0.43	1.1/ 1.3	1.5/ 1.8	2.2/ 2.5	4.0/ 4.6	4.0/ 4.6
Heater, kW	1.5	2.5	5	6	10	14	15
Average power consumption kW at 90°	0.9	1.4	2.5	4.6	8.1	12	12
Airflow m3/h 50-60 Hz at a counter pressure of 0.1 bar	25	50	90	170	300	440	440
Raw material hopper capacity, litre	25	50	90	180	350	500	600
Noise level, dB(A)	60	60	65	70	75	75	75
Power cable, m	3	3	3	5	5	5	5
Net weight, kg	43	52	85	91	175	225	240

Maximum drying temperature for standard units: 140° C.

3.2 Typeplate

The typeplate is located on the side of the control containing all electrical data for connections. The serial number consists of a code (A)(B), a type number (C) and a serial number (D).

3.2.1 Code (A) and (B):

The first and last digit (A) in the code indicate the year in which the machine was produced.

E.g. 9ST5 = 1995.

The two middle letters (B) in the code indicate whether the machine is a standard model or not.

ST = Standard apparatus
SP = Special construction meeting the customer's requirements
HT = HT/LT model
EX = Special mark for remote controls
ES = Special mark for substitute controls

3.2.2 Type (C)

The type number consists of two digits that indicate the machine type:

CD 25:	91
CD 50:	92
CD 90:	93
CD 180:	94
CD 350:	95
CD 500:	96
CD 600:	97

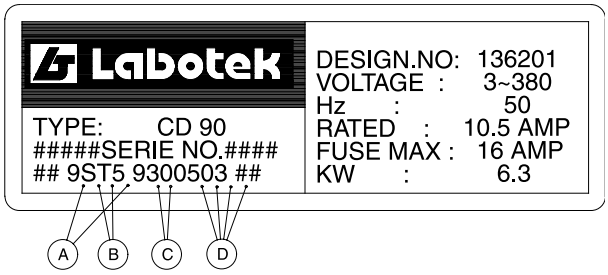
3.2.3 Serial number (D)

The serial number consists of five digits that refer to the exact production number of the machine.

The serial number consists of a code (A)(B), a type number (C) and a serial number (D).

3.2.4 Serial number (D)

The serial number consists of five digits that refer to the exact production number of the machine.



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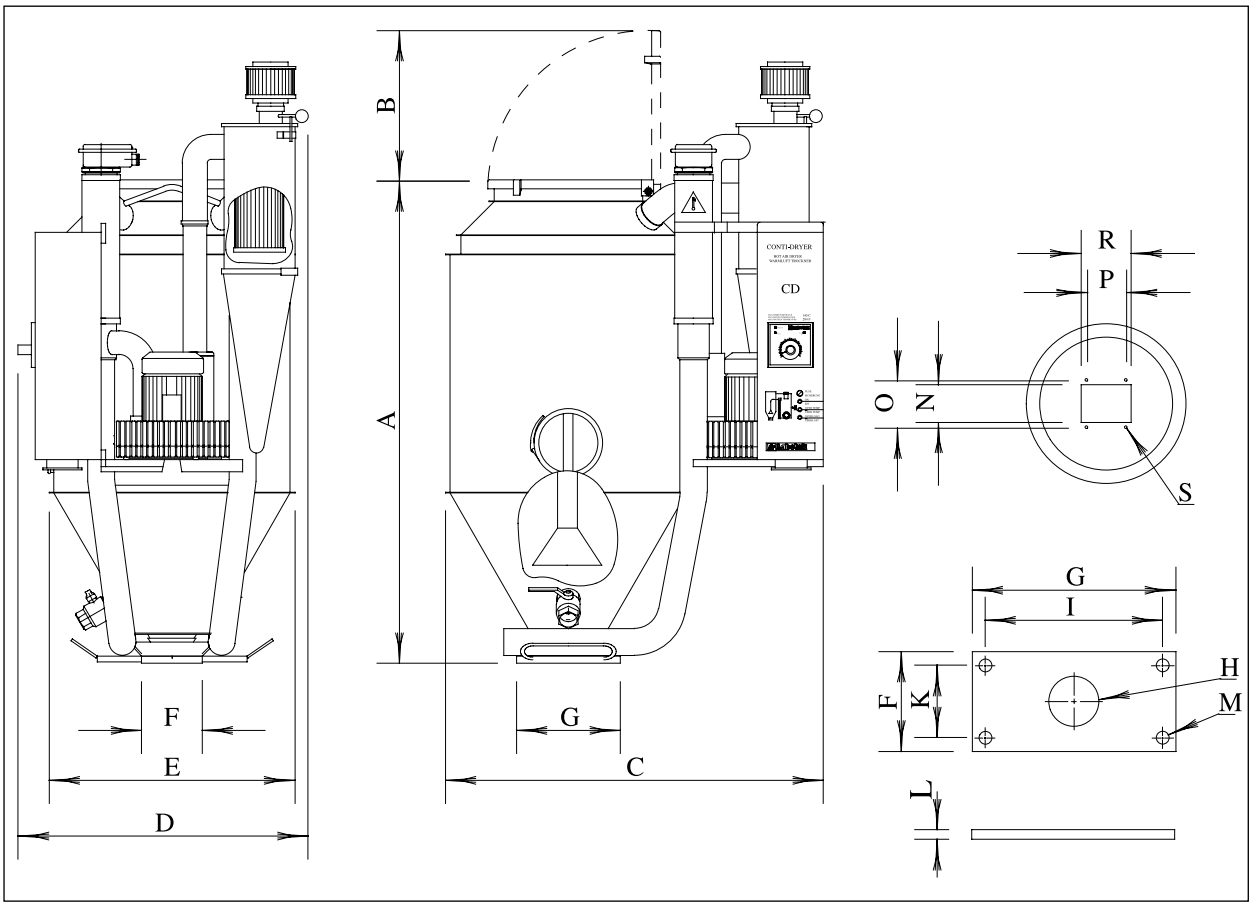
3.3 Dimensioned sketches

All measurements in mm.



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	CD 25	CD 50	CD 90	CD 180	CD 350	CD 500	CD 600
A	750	930	1060	1490	1600	1980	
B	-	340	340	340	340	340	340
C	570	640	810	890	1235	1235	1235
D	490	490	580	580	810	810	810
E	Ø395	Ø360	Ø500	Ø545	Ø790	Ø790	Ø790
F	80	80	122	122	158	158	158
G	176	176	216	216	278	278	278
H	Ø50	Ø50	Ø70	Ø70	Ø102	Ø102	Ø102
I	120	120	172	172	236	236	236
K	58	58	84	84	118	118	118
L	13	13	13	13	17	17	17
M	Ø9	Ø9	Ø13	Ø13	Ø17	Ø17	Ø17
N	120	120	120	120	120	120	120
O	150	150	150	150	150	150	150
P	125	125	125	125	125	125	125
R	160	160	160	160	160	160	160
S	M8	M8	M8	M8	M8	M8	M8
T	250	250	415	415	770	770	770

3.4 Capacity table

Raw Material		Drying time in hours	Recommended drying temp.	Initial moisture content	CL 25	CD 50	CD 90	CD 180	CD 350	CD 550	CD 600
PE	Polyethylene	1.25	65-90		12	24	43	86	168	240	288
PP	Polypropropylene	1.5	90		10	20	36	72	140	200	240
PS	Polystyrene	1.5	80		10	20	36	72	140	200	240
SB	Polystyrene High impact	2.0	80	0.4	7.5	15	27	54	105	150	180
ABS	Acrylonitrile Butadiene Styrene	2.25	80		7	13.5	24	48	93	133	160
PPO	Polyphenylene Oxide	2.25	120		7	13.5	24	48	93	133	160
PVC	Poly Vinylchloride	2.25	65-70	0.5	7	13.5	24	48	93	133	160
SAN	Styrene Acrylonitrile	2.25	80		7	13.5	24	48	93	133	160
PI	Polymide	2.25	120		6	12	21.5	43	84	120	144
CA	Cellulose Acetate	2.75	75	1.0	5.5	11	19.5	39	76	109	131
PSU	Polysulfene	2.75	120		5.5	11	19.5	39	76	109	131
CAB	Cellulose-Acetate Butrane	3.0	75	1.0	5	10	18	36	70	100	120
POM	Polyacetal	3.0	100		5	10	18	36	70	100	120
AN	Barex	3.25	80		4.5	9	16.5	33	65	92	111
PA	Polyamide 6, 6/6 6.10	3.25	75-85	1.0	4.5	9	16.5	33	65	92	111
PUR	Polyurethane	3.25	90		4.5	9	16.5	33	65	92	111
PMMA	Polymethyl Methacrylate	3.5	80	0.1	4	8.5	15.5	31	60	86	103
PE	Polyethylene, Black	3.75	75-85	1.0	4	8	14.5	29	56	80	96
CP	Cellulose Propionate	4.5	70-75	2.0	3.5	6.5	12	24	47	67	80
PA	Polyamide 6/6, 6/6 6.10	4.5	70-75	2.0	3.5	6.5	12	24	47	67	80
-	Inomere (Surlyn A)	5.5	65-70		3	5.5	10	20	38	55	65

The values stated in the capacity table are directive only, as shape and bulk density of the granule may influence the air speed and by that the drying ability. The tests are performed using granule with a bulk density of 0.6 and a granular size of 2-3 mm.

Drying temperatures and times are directive only, as these can vary from one producer to another. Therefore it is advisable always to check with the supplier of the relevant raw material.

The capacities stated are obtained at an ambient temperature of 20° C and a relative humidity of 65% under which conditions a final moisture content of 0.04% is obtainable.

A higher relative humidity could be the reason as to why the stated value cannot be obtained in all cases.

Certain materials will require a lower residual humidity than the one stated, especially in matters of extrusion, and in such cases it will be necessary to use a dry air dryer type DDL, DDM or DCD.

3.5 Security measures

3.5.1 Con-Evator support

All CD units, except for the smallest type, are equipped with a bracket supporting the Con-Evator vacuum conveyor when the lid is open.

3.5.2 Overtemperature protection

The electronic temperature controller is equipped with an electronic overtemperature protection which automatically cut off the control current of the heater, if the temperature rise 12° C above adjusted value. In case of overtemperature condition, a red diode on the control panel lights up.

The overtemperature protection is reset by switching the main switch of the machine on and off.

3.5.3 Fire protection (see fig. 8.1)

All Conti-Dryer units are equipped with a fire protection (83) in the form of a thermistor (bi-metal) of 210° C.

At a temperature above 210° C the circuit-breaker overload of the heater in the control is released thus cutting off main power to the heater. When the thermistor is sufficiently cooled and still in working condition, the protection is reset on the release button of the circuit breaker overload by switching the main switch of the machine off and then on.

3.5.4. Heater (see fig. 2.3)

At operation at high temperatures the filter housing (4) and the heater (3) are able to reach extremely high temperatures. Signs warning against high-temperature condition are placed accordingly.

3.6 Noise level

The Conti-Dryer has the following noise level according to DS/ISO-3746:

Type	CD 25	CD 50	CD 90	CD 180	CD 350	CD 500	CD 600
DB(A)	60	60	65	70	75	75	75

4.0 ASSEMBLY / DISASSEMBLY

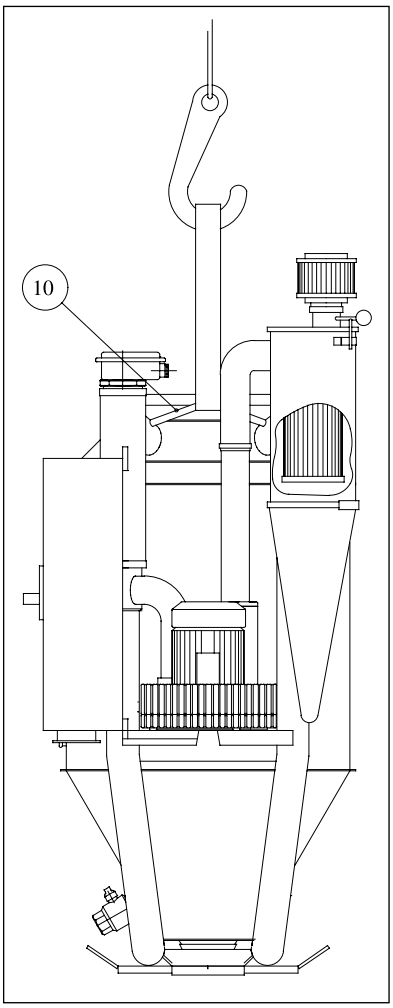
4.1 Assembly

The Conti-Dryer is designed for assembly directly on the processing machines replacing the machine hopper.

If the Conti-Dryer flange does not match the hopper flange on the processing machine, it is necessary to make an intermediate flange.

4.1.1 Assembly flange

The Conti-Dryer is supplied fully equipped. The machine is lifted in the transversed lifting fixture (10) on the frame, as shown in the sketch.



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WARNING: Lifting, as illustrated, must be done only with the hopper being depleted.

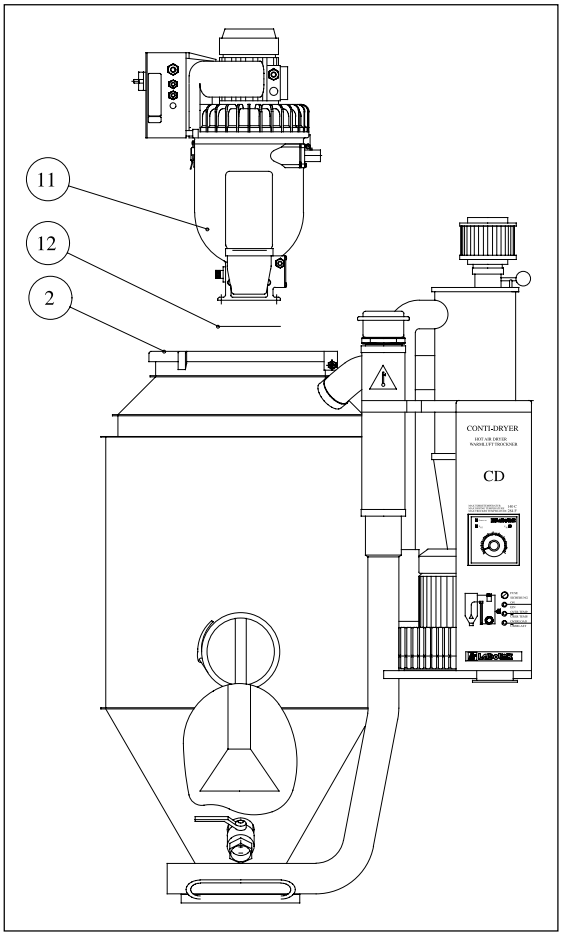
Assembly dimensions: see dimensioned sketch section 3.3

4.1.2 Assembly of Con-Evator

The lid (2) on the machine features a cutting and a flange for assembly of a Con-Evator vacuum conveyor (11) type PGT.

1. Disassemble the cover plate (12) on CD lid.

2. Fix the vacuum conveyor (11) bolt holes matching on the lid, using 4 bolts M8.



R1630

The below table indicates which types of Labotek vacuum conveyors that can be fitted on CD.

	MF 98*	PGT 4	PGT 61	PGT 9
CD 25	X	X		
CD 50	X	X	X	
CD 90	X	X	X	(X)
CD 180		X	X	(X)
CD 350		X	X	X
CD 500		X	X	X
CD 600		X	X	X1

* An intermediate flange (225027) is used to fit MF 98. For reasons of weight the PGT 9 should be fitted only on CD 90 and CD 180 in their divided execution.
For reasons of weight the PGT 9 should be fitted only on CD 90 and CD 180 in their divided execution.

4.2 Disassembly

If it is required to disassemble the Conti-Dryer, all material must be discharged first.

Power must be disconnected, and Con-Evator, if attached, disassembled. The Conti-Dryer can now be handled in the lifting fixture (10). See fig. 4.1.1

4.3 Connections

1. Check that the voltage available correspond to the voltage requirement indicated on the typeplate. The typeplate is located on side of the control (see point 3.1).

2. Connect the machine according to diagram. To be found in the back of the manual.

3. Turn on the machine using the main switch and check that the blower runs arrow directed.

   If not, switch two phases.

4. If a vacuum conveyor is attached, it can be power supplied from the CD. Terminals have been set out for this purpose (terminal 7.8.9 and PE).

   Check revolving direction at start-up of the vacuum conveyor. A label is attached on the ventilation cover where the long arrow indicates conveying and the short one filter cleaning. (See also manual for Con-Evator).

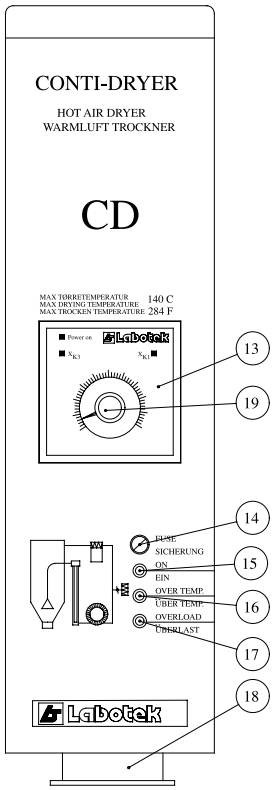
5. A potential free contact is available for connection of an external alarm. See diagram in the pocket in the back of the manual.

6. The control which is usually fixed on the unit can be placed remotely up to 10 m from the unit.

7. By remote placing the control must be turned vertically placed, like on the unit.

4.4 Control

4.4.1 Control buttons



R1632

(13) Temperature controller

(14) Fuse

(15) Diode - power on

(16) Diode - overtemperature

(17) Diode - motor overloaded

(18) Main switch

On CD 25-180 units the whole control box can be tilted to an angle of 90 degrees thus providing easy access to all front components. On CD 350-600 units the control front plate is integrated in the cabinet. Access to components via side door in cabinet.

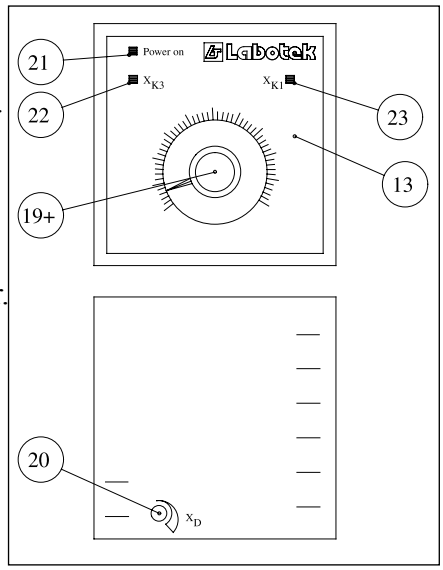
4.4.2 Temperature controller (13)

Temperature adjusting button (19)

Button for adjusting temperature. Temperature scale values displayed in both °C and °F.

°C: Large, white text
°F: Small, green text

Adjusting the drying temperature in the area 80-130° C.



R1633

Hysteresis adjusting button (20)

Button for adjusting hysteresis (temperature fluctuation area).
The button is placed on side of the temperature controller.
The button for hysteresis adjustment is factory preset to approx. mid area.

Further adjustments are usually not required.

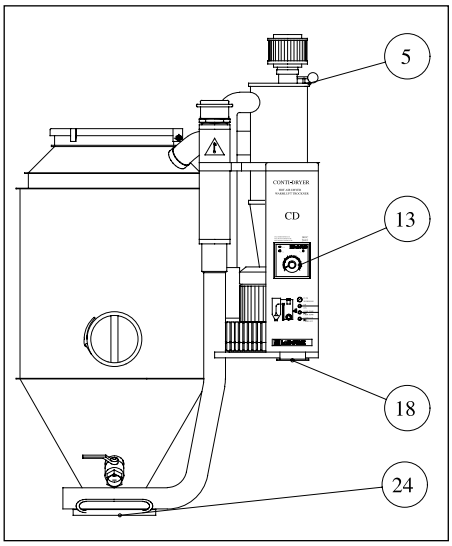
Diode voltage on (21)

«Power on» indicates that the temperature controller is connected.

Diode, heater on (22)

Diode, overtemperature (23)

Diode giving signal if current temperature is 12° C (35°F) above/below set temperature.



R1634

4.5 Adjustment

1. Adjust required drying temperature on the temperature controller (13)

2. Adjust air intake on top of the filter by turning the fresh air valve (5).

Maximum = full fresh air intake

Minimum = lowest air intake and major recirculation share

As a start the fresh air valve is adjusted in the middle of the interval. Adjust until required drying result is achieved.

4.6 Start

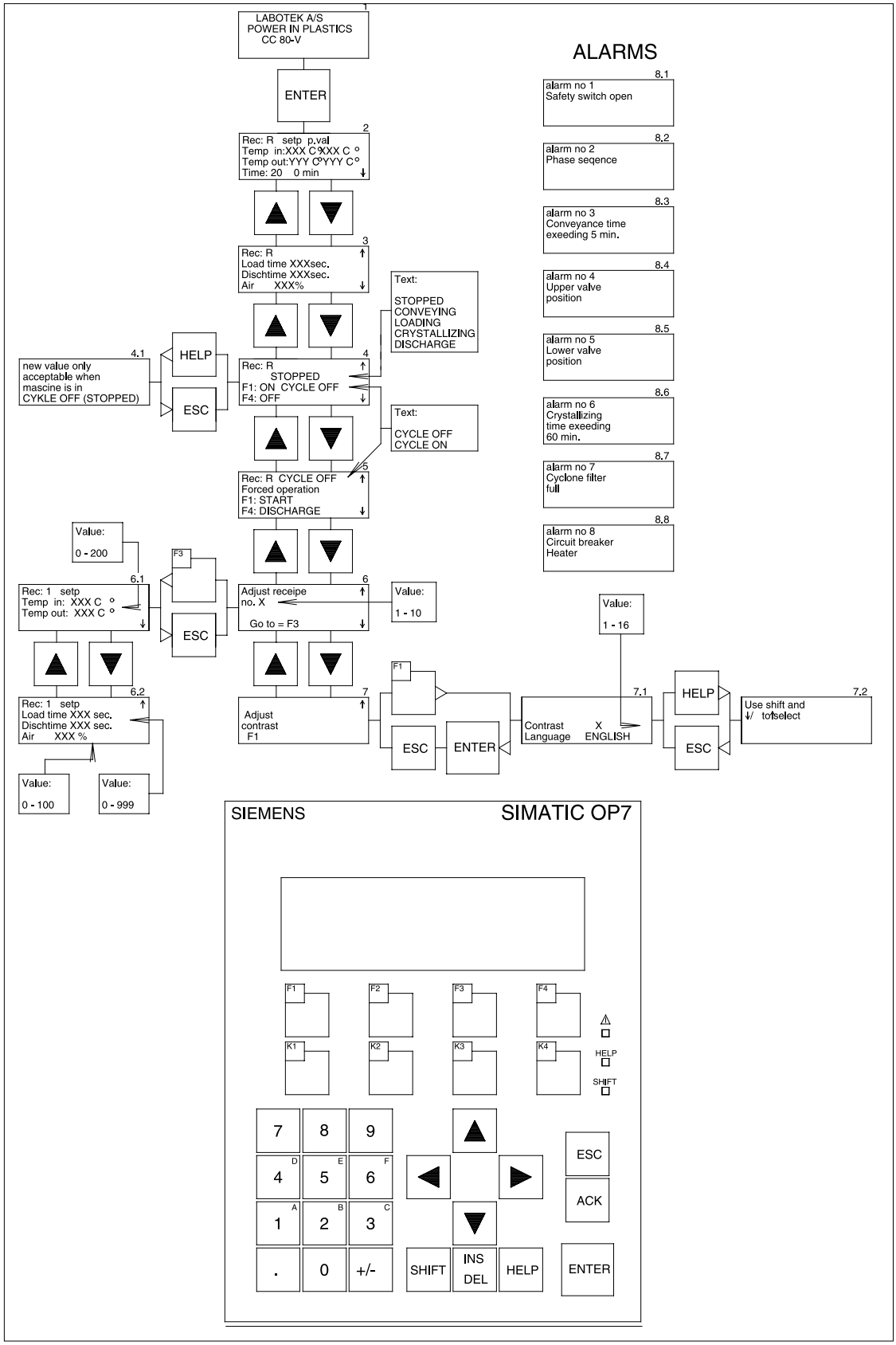
1. Close slide valve (24) in bottom of drying hopper.
2. Charge hopper either manually or by means of an attached Con-Evator.
3. Required drying temperature is adjusted on temperature controller (13).
4. Use main switch (18) to connect power.
5. Wait recommended drying time (see capacity table).
6. The slide valve (24) in bottom of drying hopper can now be opened, and production set going.

4.7 Operation

If the CD is used for batch drying, the hopper must be recharged whenever empty by turning off the drying apparatus and follow the above described start procedure.

If the CD is used in continuous operation with Con-Evator attached, the drying hopper is charged automatically pari passu with consumption which is controlled by the Con-Evator bottom flap.

It is necessary only to make sure that material is continuosly available to the Con-Evator. An alarm for missing material can be fitted. (see Con-Evator manual).


1
LABOTEK A/S
POWER IN PLASTICS
CC 80-V
ENTER
2
Rec: R setp p.val
Temp in:XXX C°XXX C °
Temp out:YYY C°YYY C°
Time: 20 0 min
3
Rec: R
Load time XXXsec.
Dischtime XXXsec.
Air XXX%
Text:
STOPPED
CONVEYING
LOADING
CRYSTALLIZING
DISCHARGE
4.1
new value only
acceptable when
mascine is in
CYKLE OFF (STOPPED)
HELP
ESC
4
Rec: R
STOPPED
F1: ON CYCLE OFF
F4: OFF
Text:
CYCLE OFF
CYCLE ON
5
Rec: R CYCLE OFF
Forced operation
F1: START
F4: DISCHARGE
Value:
0 - 200
F3
6.1
Rec: 1 setp
Temp in: XXX C °
Temp out: XXX C °
ESC
6
Adjust receipe
no. X
Go to = F3
Value:
1 - 10
6.2
Rec: 1 setp
Load time XXX sec.
Dischtime XXX sec.
Air XXX %
Value:
0 - 100
Value:
0 - 999
7
Adjust
contrast
F1
F1
ESC
ENTER
Value:
1 - 16
7.1
Contrast X
Language ENGLISH
HELP
ESC
7.2
Use shift and
↓/ ↑to select
ALARMS
8.1
alarm no 1
Safety switch open
8.2
alarm no 2
Phase seqence
8.3
alarm no 3
Conveyance time
exeeding 5 min.
8.4
alarm no 4
Upper valve
position
8.5
alarm no 5
Lower valve
position
8.6
alarm no 6
Crystallizing
time exeeding
60 min.
8.7
alarm no 7
Cyclone filter
full
8.8
alarm no 8
Circuit breaker
Heater
SIEMENS
SIMATIC OP7
F1
F2
F3
F4
K1
K2
K3
K4
HELP
SHIFT
7
8
9
4
5
6
1
2
3
.
0
+/-
SHIFT
INS
DEL
HELP
ESC
ACK
ENTER

4.7.1 Change of material

The stop/start procedure applies to change of material also.

At change of material it is recommended to clean out dust and regrind from the hopper. Remaining granulate can be removed by opening the slide valve. Dust can be removed by opening the lid or by disassemble the sight glass and clean out using compressed air - the discharge valve (31) must be kept open during this procedure.

4.8 Stop

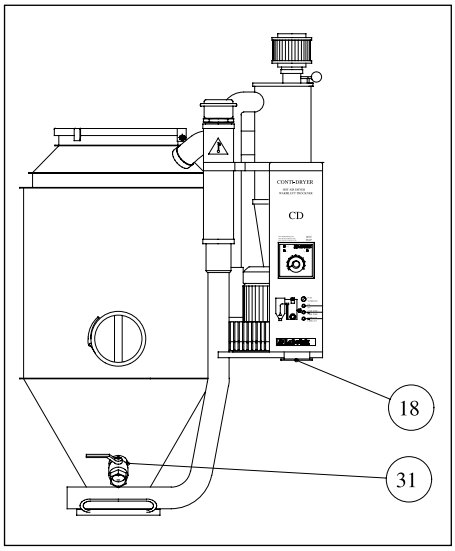
1. If attached stop Con-Evator on main switch placed on its control.

2. Discharge the CD drying hopper either by running it dry or by discharging it through the discharge valve (31) in the cone of the drying hopper.

   It is recommended to leave the CD blower on during discharging, as it will facilitate discharging.

3. When the drying hopper has run empty, or if it is required to interrupt production, the CD is stopped on the main switch (18).

4. At long production stops it is recommended to lower the temperature to avoid “overdrying” of the material.



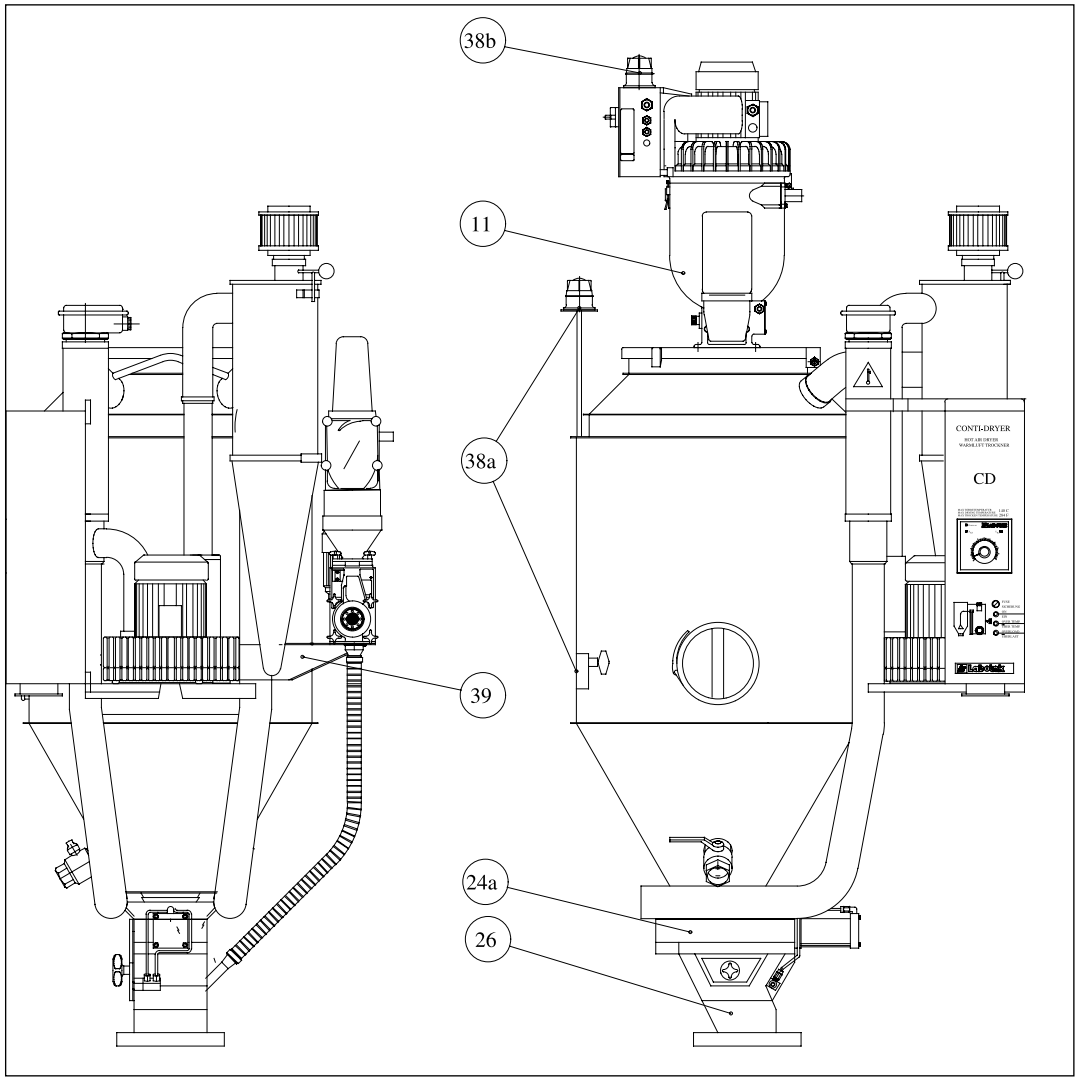
R1635

5.0 ACCESSORIES

The following standard accessory is available to the machine. Labotek will always be at your disposal on development of special parts.

5.1 List of accessories

Mounting base featuring a magnet and a manual slide valve	(26)
Pneumatic slide valve	(24a)
Con-Evator	(11)
Level control + alarm lamp	(38a)(38b)
Assembly fixture for Mini Master-Batcher (chamber dosing)	(39)



R1637

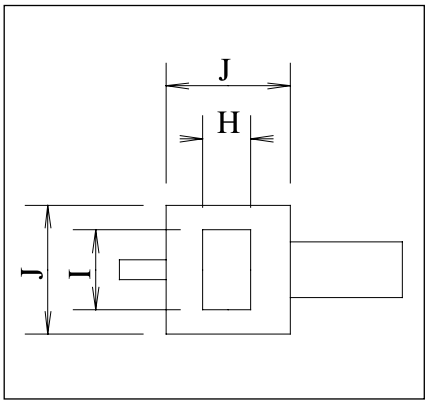
5.2 Assembly of accessories

5.2.1 Assembly of mounting base (26)(see fig. R1637 section 5.1)

The mounting base, featuring a sight glass and a magnet grid, is fitted to avoid magnetic particles in the raw material from entering the screw of the production machine, or when it is required to add masterbatch or other additives.

The mounting base is as standard equipped with a manually operated slide valve. A pneumatic one is also available.

1. Close slide valve and disassemble CD from frame / processing machine.
2. First assemble intermediate flange / slide valve (24a) on the machine.
3. Then fit mounting base (26) on intermediate flange / slide valve (24a).
4. Assemble CD on frame / processing machine.



R1693

	DDL 25	DDL 50	DDL 90	DDL 180	DDL 350	DDL 500	DDL 600
H	45	45	60	60	120	120	120
I	60	60	80	80	118	118	118
J	120	120	182	182	236	236	236

5.2.2 Assembly of pneumatic slide valve

On CD 350-600 it is recommened to fit a pneumatic slide valve. A manually operated valve can be difficult to operate on these unit owing to the amount of material in the hopper.

If CD 25-180 is assembled on frame, then first assemble an intermediate flange prior to the pneumatic valve. On CD 350-600 the valve can be fitted immediately.

Warning: Do not connect compressed air to the valve before appropiate measures are taken to hinder unintended access to the slide valve, so eliminating the risk of bodily injury.

The slide valve is factory-labelled against sharp edge mechanism.

5.2.3 Assembly of conveyor Con-Evator PGT (11).

The conveyor Con-Evator PGT will automatically keep the drying hopper full, thus creating an even flow of material in the drying hopper, corresponding to the material consumption in the production.

Assembly, see section 4.1.2

5.2.4 Level control + alarm lamp (38a) (38b)

The machine is not factory prepared for this accessory which must be fitted by an authorized Labotek technician.

Please note that an alarm lamp (38b), giving signal at missing material condition, is available for the vacuum conveyor type Con-Evator.

5.2.5 Assembly fixture for Mini Master-Batcher (39)

This fixture applies when it is required to dose directly into the Conti-Dryer using Labotek's chamber dosing unit MMB. Dosing problems may occur, as the pressure in the Conti-Dryer may go out through the mounting base and up through to the hose to the MMB. A special pressure compensation kit is available from Labotek in such case.

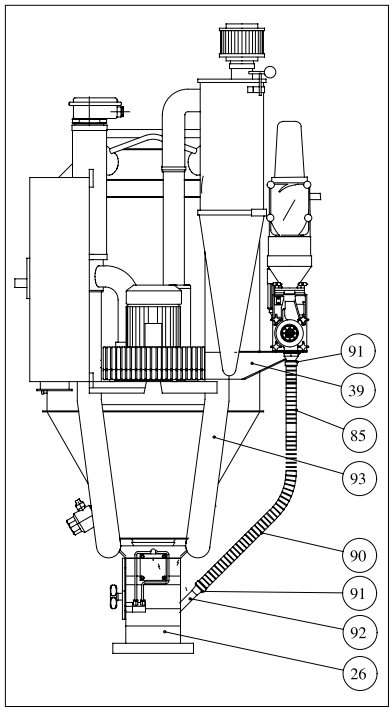
1. It is a condition that a mounting base (26) is assembled between CD and production machine.

2. Fit assembly fixture (39) on pipe chassis (93).

3. Fit using two clips (91) hose (90) between assembly fixture (39) and outlet pipe (92).

5. Disassemble plug in inlet branch of mounting base by loosening the screw retaining it. Put the outlet pipe (92) down in the mounting base (26).

6. Assemble MMB on assembly fixture and connect according to diagram.



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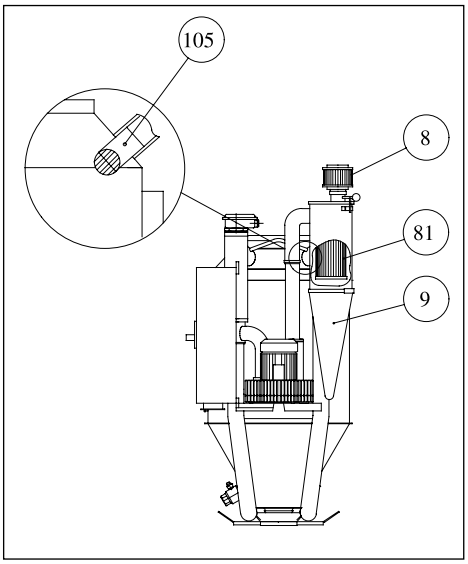
6.0 MAINTENANCE

6.1 Maintenance of filters

The CD features the following filters:

Designation	Type of filter	Check-up intervals	Check-up procedure
Intake filter (8)	Wire mesh	As required	Check-up and clean using air. At insufficient result, wash the filter.
Recirculation filter (81)	Cartridge (paper)	As required Recommendation: 50 hours	Check-up and clean using air. At insufficient result, replace the filter
Filter bag (9)	Polyester	As required. Recommendation: 50 hours	Check-up and clean using air. At insufficient result, replace filter.
Return air filter (105)	Wire mesh	As required: Recommendation: 50 hours	Check-up and clean using air. At insufficient result, replace replace filter.



R1643

6.2 Maintenance of magnet grid (accessory)

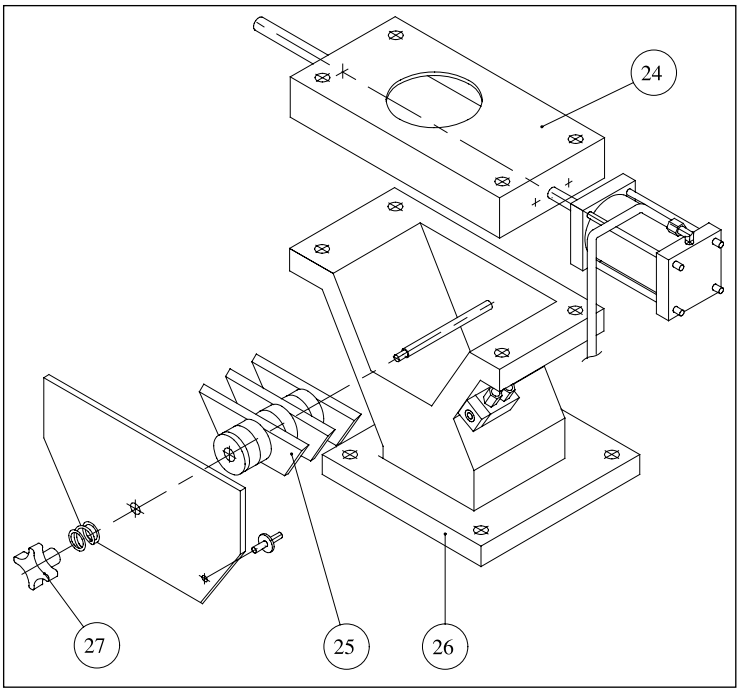
The magnet grid (25) is placed in the mounting base (26)(accessory). The grid automatically picks up magnetic material, thus avoiding damage of screw of production machine. Inspect magnet grid at least once a year.

1. Close slide valve (24)

2. Remove finger screw (27) on glass lid.

   Warning: The granulate in the bottom of the hopper may be warm.

3. Remove magnet grid (25) and clean it using e.g. compressed air.



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6.3 Maintenance of drying hopper

1. Turn off the machine and discharge the drying hopper (1) as at change of material.

2. Open lid (2), disassemble and remove air distributor (30) being mounted by means of a quick coupling (28). (On CD 25 the air distributor is assembled by means of a split pin).

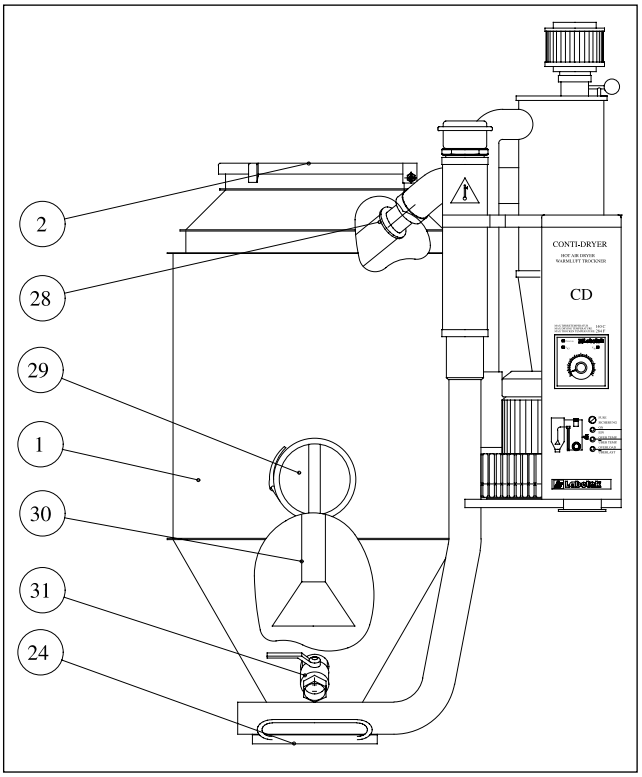
3. Disassemble sight glass (29).

4. Close slide valve (24).

Hopper (1) and air distributor (30) can now be cleaned using compressed air either from the top or through the sight glass opening.

Please note, that when discharging through the discharge valve (31) the hopper may not be entirely depleted, as granulate may remain on top of the slide valve and has to be disposed of.

Maintenance of return air filter see section 6.1



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7.0 TROUBLESHOOTING

7.1 The machines does not start / dies

Signal: green light does not light up

	Cause	Remidial action
1.	No power	Check main connections / fuse
2.	Fuse on PCB defective	Replace
3.	Circuit breaker overload OFM1 for motor cut out	Reset QFM1 (see 6.1)
4.	Fuses on primary side of transformator cut out	Replace FU1/FU2
5.	Fuse for secondary circuit cut out	Replace FU 3 If a fuse cuts out more than twice, call for a repairman

Signal: green lamp lights up, red over-load lights up

Cause	Remidial action
Circuit breaker overload QFM1	Open control box, reset red button on QFM1

Possible causes for cut out of circuit breaker overload for motor:

- phase missing
- motor overloaded
- filter clogged
- worn down
- blocking

7.2 The machine runs, but heats insufficiently

A: Signal: green lamp lights up + red overtemperature light on

Cause	Remidial action
Overtemperature control cut out:	Leave it to cool down
Overtemperature control defective	Replace

Temperature controller defective	Replace
Thermistor defective	Replace
Control PCB etc. defective	Replace

B. Signal: Green lamp lights up + green diode on temperature controller

Cause	**Remidial action**
The temperature controller does not activate the heater	
1. Circuit breaker overload for heater cut out	Reset QFM2. At recurrences call for a repairman.
2. Temperature controller defective	Replace
3. Heater defective	Replace

C: Signal: Green lamp lights up + temperature controller no light

Cause	**Remidial action**
Temperature controller defective	Replace

D: Signal: Temperature lower than temperature adjusted on temperature controller

Cause	Remidial action
PT100 sensor defective	Replace
Temperature controller defective	Replace
Heater defective	Replace

7.3 The machine dries insufficiently (temperature ok)

Signal: Finished products show surface defects due to humidity

	Cause	Remidial action
1.	Use of additives	Additives can make it almost impossible to dry plastics raw naterial. Check with your raw material supplier.
2.	Consumption too big and/or drying time too short	Check material consumption and drying time. Compare to capacity table. If capacity is too low, replace to a larger CD type.
3.	Moisty air is being recirculated	Position CD on full fresh air intake.
4.	Ambient air too moisty	The problem cannot be made good with this type of apparatus. Seek advice with machine supplier regarding replacement to a dry air dryer.

8.0 REPAIR

8.1 Replacement of heater

1. Turn off power to the machine.

2. Remove cover (93) of casing (85)

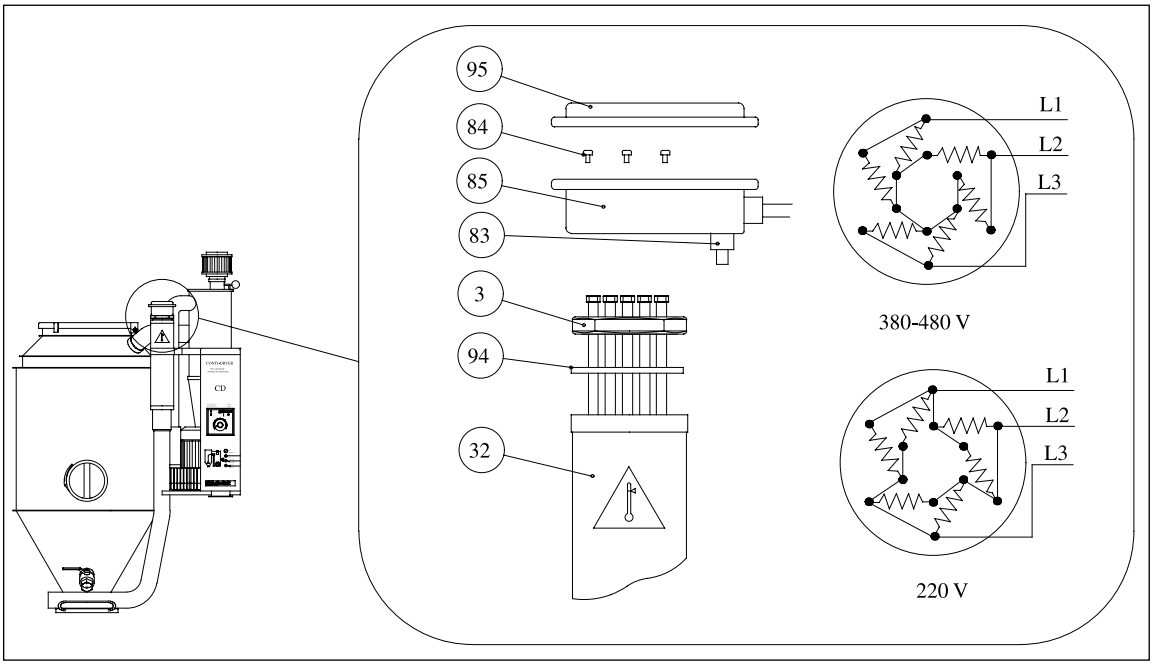
3. Disassemble wires to heater (3) and label accordingly. Then disassemble housing (85), on which the fire protection (83) is assembled, by loosening the three screws (84).

4. Unscrew heater of heater pipe (32)

5. Pick up new heater, and pull carefully the bars a little from eachother. Fit a new heater after having replaced the gasket (94).

7. Fit housing (85) and wire to heater.

   Heater must be connected in star or delta depending on voltage. See diagramme.



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